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a non-imaging optical waveguide, connected to said first port, and adapted to direct light around said corner;

a second port connected to said non-imaging optical waveguide; and

[The apparatus of claim 1 further comprising:]

a non-imaging optical concentrator for delivering a beam of light having half-angle divergence of 90 degrees, connected between said optical fiber and said first port.

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Sub 03
Port shown in drawing

4. (Amended) An apparatus for efficiently deflecting light from an optical fiber around a corner, comprising:

a first port adapted to be coupled to said optical fiber and to receive light with divergence angles of less than 90 degrees from the axis of said optical fiber;

a non-imaging optical waveguide, connected to said first port, and adapted to direct light around said corner;

a second port connected to said non-imaging optical waveguide;

[The apparatus of claim 1] wherein said second port is adapted to direct light from said optical fiber to a patient, and further comprising:

a third port adapted to be coupled to a second optical fiber and direct light to said second optical fiber with divergence angles of less than 90 degrees from the axis of said second optical fiber;

a second non-imaging optical waveguide, connected to said third port, and adapted to direct light around a corner; and

a fourth port connected to said second non-imaging optical waveguide and configured to receive reflected light from said patient.

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8. (Twice amended) An apparatus for efficiently deflecting light from an optical fiber around a corner, comprising:

a first port adapted to be coupled to said optical fiber and to receive light with divergence angles of less than 90 degrees from the axis of said optical fiber;

a non-imaging optical waveguide, connected to said first port, and adapted to direct light around said corner;

a second port connected to said non-imaging optical waveguide;

[The apparatus of claim 1 wherein:]

wherein every section parallel to the plane of said corner is identical, and
upper and lower surfaces of said non-imaging optical waveguide are planar
reflective surfaces.

12. (Amended) An apparatus for efficiently deflecting light from an optical fiber around a corner, comprising:

a first port adapted to be coupled to said optical fiber and to receive light with divergence angles of less than 90 degrees from the axis of said optical fiber;

a non-imaging optical waveguide, connected to said first port, and adapted to direct light around said corner;

a second port connected to said non-imaging optical waveguide;

[The apparatus of claim 1 further comprising:]

a non-imaging optical concentrator for delivering a beam of light having half-angle divergence of 90 degrees, connected between said optical fiber and said first port; and

wherein said non-imaging optical waveguide comprises a first curved reflective segment extending along an outside of a turn around of said corner, and a second curved reflective segment extending around an inside of said turn around said corner.

13. (Amended) The apparatus of claim 12 wherein, in any section parallel to the plane of [the bend] said corner, said first curved reflective segment appears as a section of a first ellipse and said second curved reflective segment appears as a section of a second ellipse.

15. (Amended) The apparatus of claim 14 wherein:

every section parallel to the plane of [the bend] said corner is identical, and
upper and lower surfaces of said non-imaging optical waveguide are planar reflective surfaces.

16. (Amended) The apparatus of claim 14 wherein:

said non-imaging optical concentrator is of the 3D type, and
in every section parallel to the plane of [the bend] said corner, said first curved
reflective segment is of such size as to contact the outer edge of said first port and said second
curved reflective surface is of such size as to contact the inner edge of said first port.

17. (Amended) An apparatus for efficiently deflecting light from an optical fiber
around a corner, comprising:

a first port adapted to be coupled to said optical fiber and to receive light with
divergence angles of less than 90 degrees from the axis of said optical fiber;

a non-imaging optical waveguide, connected to said first port, and adapted to
direct light around said corner;

a second port connected to said non-imaging optical waveguide;

[The apparatus of claim 1] wherein said non-imaging optical waveguide
comprises:

a first reflective segment extending along an inside of a turn around said corner
from said first port to said second port, such that in any section parallel to the plane of
[the bend] said corner, said first reflective segment appears as a straight line; and

a second reflective segment extending along an outside of said turn around said
corner from said first port to said second port, such that in any section parallel to the
plane of [the bend] said corner, said second reflective segment appears as a curve
comprising

a first parabolic segment extending from said first port,

an elliptical segment extending from said first parabolic segment, and

a second parabolic segment extending from said elliptical segment to
said second port.

18. (Amended) The apparatus of claim 17 wherein:

every section parallel to the plane of [the bend] said corner is identical, and
upper and lower surfaces of said non-imaging optical waveguide are planar reflective surfaces.

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19. (Amended) The apparatus of claim 17 wherein:

said first port is circular in cross section, and in every section parallel to the plane of [the bend] said corner, said first curved reflective segment is of such size as to contact the outer edge of said first port and said second curved reflective surface is of such size as to contact the inner edge of said first port.

24. (Amended) The apparatus of claim 17 wherein said second port is at an angle of less than ninety degrees from said first port, and further comprising:

a third port around a second corner from said second port;

a third reflective segment extending along an inside of a turn around said second corner from said second port to said third port, such that in any section parallel to the plane of [the bend] said corner, said third reflective segment appears as a straight line; and

a fourth reflective segment extending along an outside of said turn around said second corner from said second port to said third port, such that in any section parallel to the plane of [the bend] said corner, said fourth reflective segment appears as a curve comprising:

a third parabolic segment extending from said second port,

a second elliptical segment extending from said third parabolic segment, and

a fourth parabolic segment extending from said second elliptical segment to said third port.

25. (Amended) An apparatus for efficiently deflecting light from an optical fiber around a corner, comprising:

a first port adapted to be coupled to said optical fiber and to receive light with divergence angles of less than 90 degrees from the axis of said optical fiber;

a non-imaging optical waveguide, connected to said first port, and adapted to direct light around said corner;

a second port connected to said non-imaging optical waveguide;

[The apparatus of claim 1] wherein said first and second ports are rectangular.